CYCLONE FREQUENCIES IN THE UNITED STATES[1] FOR THE PERIOD 1905 TO 1954

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Cyclone tracks as published in the *Monthly Weather Review* for the years 1905 through 1954, were used as a basis to tabulate the number of cyclones per month *passing through* each 5° grid of latitude and longitude in the United States. The number of cyclones passing through, entering, or leaving each grid for each month during the 50-year period was recorded and monthly means computed. The month-by-month data were scrutinized to discover whether, in addition to seasonal shifts in cyclone frequency, there might have been any systematic variation in frequency of a period longer than one year, or any trends in cyclone frequency that might have been related to extraterrestrial phenomena. The occurrence of any systematic latitudinal or longitudinal shift of the area of maximum frequency was also investigated. No true periodicities or trends were indicated and no tendency for a shift of the region of maximum frequency was noted.

The maps of figure 2 are reproduced here to illustrate the monthly pattern of cyclone frequency as revealed by the 50-year monthly means. The 5° grids are not everywhere equal in area so that different latitudes are not exactly comparable. The frequencies along the borders of the States are not as reliable as those inside the States due to the sparcity of data in these regions in the early years. These figures are not presented as an original contribution, but as a tabulation covering a longer period of time than could be considered by earlier investigators interested in cyclone frequencies. Discussion of these charts will be omitted, and the reader is referred to a paper by Klein [1] for a comprehensive treatment of cyclone tracks and frequencies in the Northern Hemisphere and for a complete bibliography on the subject.

Figure 1 shows a plot of the total number of cyclones for each year (1905–1955), obtained when the sums are taken of all grids for which data are available. The great variations in cyclone frequency shown in this chart do not seem to be correlated to sunspot number or earth magnetic character. It is interesting that the *variability* in cyclone frequency has increased throughout the 51-year period, and that this is paralleled by a similar increase

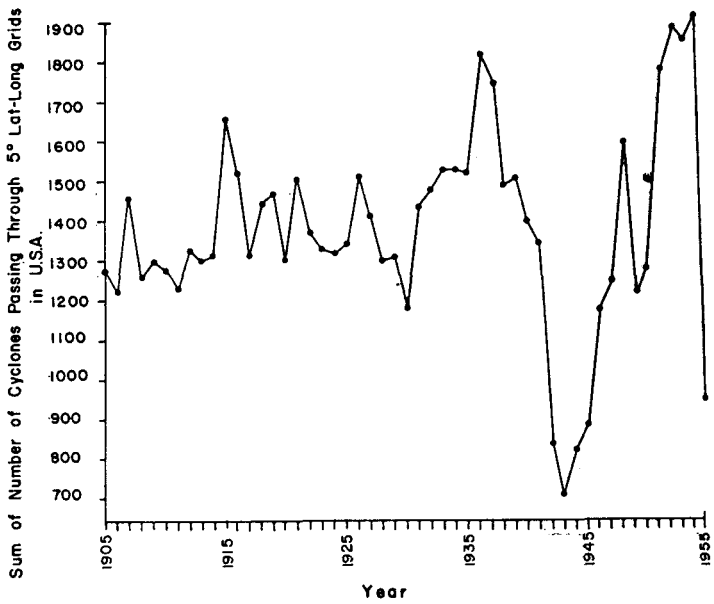

FIGURE 1.—Annual sums of number of cyclones counted in all 5° latitude-longitude grids in United States, for each year 1905 through 1955.

in the variability of sunspot numbers during the same period. The greatest deterrent to placing any interpretation on the variation in cyclone frequency from year to year lies in the fact that responsibility for defining and tracking the cyclones for charting in the *Monthly Weather Review* has changed hands frequently in the past 51 years, and the increased variability in cyclone frequency may be more closely related to the frequency with which the task of charting the cyclones changed hands than to any extraterrestrial influences. A basis for concluding that these variations are real might be the fact that since 1949 the WBAN Analysis Center (now National Weather Analysis Center) has applied a criterion defined on page 66 of the *Monthly Weather Review* for February 1949, and yet the variability in the frequencies has been nearly as great during the period 1949–1955 as during the preceding years.

The year-to-year changes in frequency are common to all areas; i. e., when the total for the United States increases, the number increases at all latitudes and all longitudes. This seems to indicate that the year-to-year

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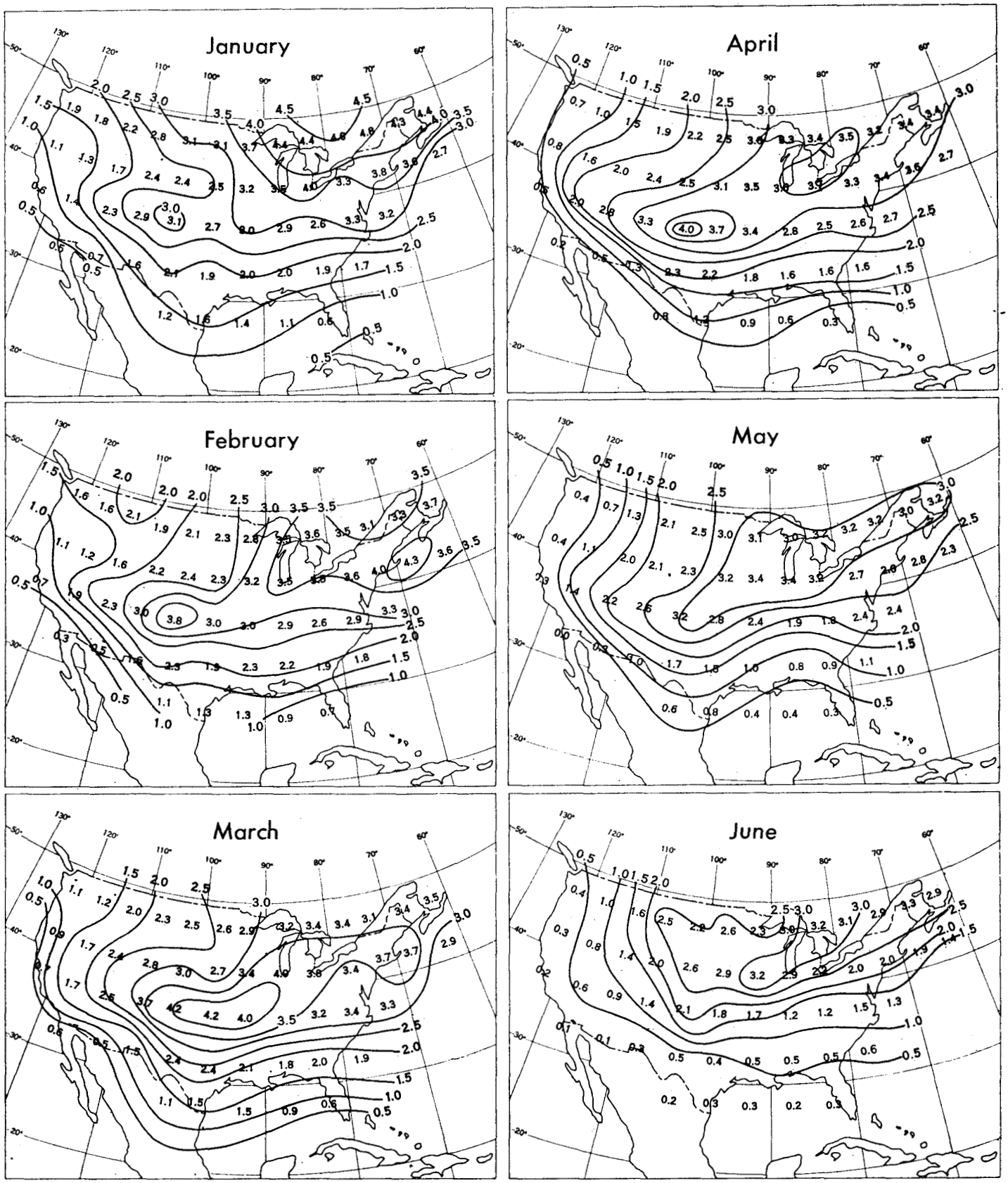

FIGURE 2.—Number of cyclones *passing through* each 5° latitude-longitude grid in the United States, by months, 1905 through 1954.
(Charts continued on following page.)

change in number cannot be attributed to lack of data in some particular area during one year or for a period of years.

The authors wish to acknowledge the help of Mr. Edward Epstein and Mr. Norman Richardson in tabulating these data.

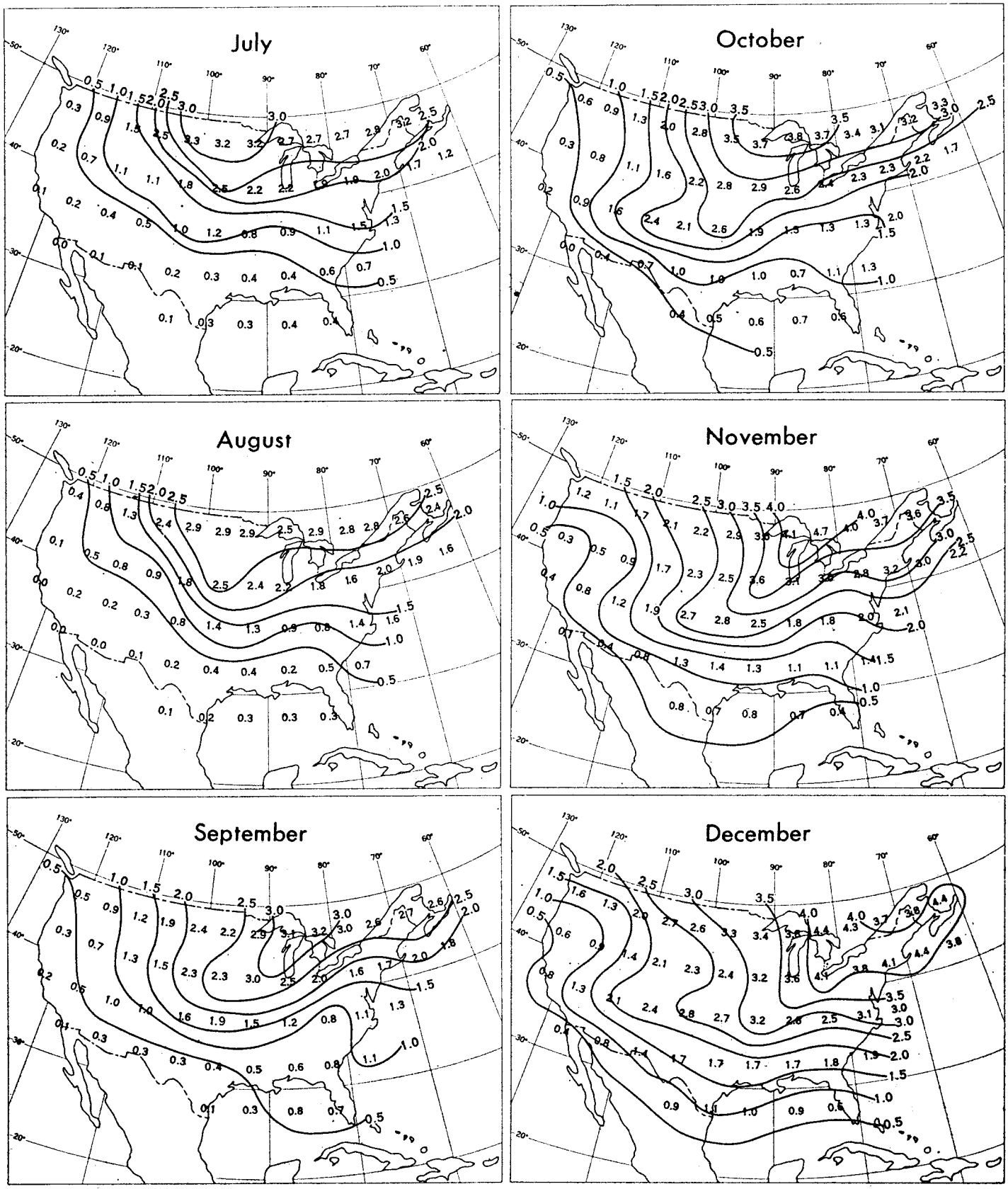

FIGURE 2—Continued.

REFERENCE

1. William H. Klein, "Principal Tracks and Mean Frequencies of Cyclones and Anticyclones in the Northern Hemisphere," U. S. Weather Bureau: *Research Paper* No. 40. (In press)